What is claimed is:

1. A precipitation hardened Co-Ni based heat-resistant alloy comprising by weight:

not more than 0.05% of C; not more than 0.5% of Si; not more than 1.0% of Mn; 25 to 45% of Ni; 13 to 22% of Cr; 10 to 18% of Mo or 10 to 18% of Mo + 1/2W; 0.1 to 5.0% of Nb; 0.1 to 5.0% of Fe;

at least one kind of 0.007 to 0.10% of REM; 0.001 to 0.010% of B; 0.0007 to 0.010% of Mg and 0.001 to 0.20% of Zr;

the balance of Co and inevitable impurities;

a fine twin structure;

a parent phase; and

$Co_3Mo$ or $Co_7Mo_6$ precipitated at boundaries of the fine twin structure and the parent phase.

2. A precipitation hardened Co-Ni based heat-resistant alloy comprising by weight:

not more than 0.05% of C; not more than 0.5% of Si; not more than 1.0% of Mn; 25 to 45% of Ni; 13 to 22% of Cr; 10 to 18% of Mo or 10 to 18% of Mo + 1/2W; 0.1 to 5.0% of Nb; 0.1 to 5.0% of Fe; 0.1 to 3.0% of Ti;

at least one kind of 0.007 to 0.10% of REM; 0.001 to 0.010% of B; 0.0007 to 0.010% of Mg and 0.001 to 0.20% of Zr;

the balance of Co and inevitable impurities;

a fine twin structure;

a parent phase; and

$Co_3Mo$ or $Co_7Mo_6$ precipitated at boundaries of the fine twin structure

and the parent phase.

3. A production method for precipitation hardened Co-Ni based heat-resistant alloy, the method comprising the steps of:

preparing an alloy comprising by weight:

not more than 0.05% of C; not more than 0.5% of Si; not more than 1.0% of Mn; 25 to 45% of Ni; 13 to 22% of Cr; 10 to 18% of Mo or 10 to 18% of Mo + 1/2W; 0.1 to 5.0% of Nb; 0.1 to 5.0% of Fe;

at least one kind of 0.007 to 0.10% of REM; 0.001 to 0.010% of B; 0.0007 to 0.010% of Mg and 0.001 to 0.20% of Zr; and

the balance of Co and inevitable impurities;

subjecting the alloy to a solid solution heat treatment; and

subjecting the alloy to an aging heat treatment at 600 to 800°C for 0.5 to 16 hours in a condition of applying stress, thereby forming a fine twin structure in a parent phase, and precipitating $Co_3Mo$ or $Co_7Mo_6$ at a boundary of the fine twin structure and the parent phase.

4. A production method for precipitation hardened Co-Ni based heat-resistant alloy, the method comprising the steps of:

preparing an alloy comprising by weight:

not more than 0.05% of C; not more than 0.5% of Si; not more than 1.0% of Mn; 25 to 45% of Ni; 13 to 22% of Cr; 10 to 18% of Mo or 10 to 18% of Mo + 1/2W; 0.1 to 5.0% of Nb; 0.1 to 5.0% of Fe; 0.1 to 3.0% of Ti;

at least one kind of 0.007 to 0.10% of REM; 0.001 to 0.010 % of B; 0.0007 to 0.010% of Mg and 0.001 to 0.20% of Zr; and

the balance of Co and inevitable impurities;

subjecting the alloy to a solid solution heat treatment; and

subjecting the alloy to an aging heat treatment at 600 to 800°C for 0.5 to 16 hours in a condition of applying stress, thereby forming a fine twin structure in a parent phase, and precipitating $Co_3Mo$ or $Co_7Mo_6$ at a boundary of the fine twin structure and the parent phase.

5. A production method for precipitation hardened Co-Ni based heat-resistant alloy, the method comprising the steps of:

preparing an alloy comprising by weight:

not more than 0.05% of C; not more than 0.5% of Si; not more than 1.0% of Mn; 25 to 45% of Ni; 13 to 22% of Cr; 10 to 18% of Mo or 10 to 18% of Mo + 1/2W; 0.1 to 5.0% of Nb; 0.1 to 5.0% of Fe;

at least one kind of 0.007 to 0.10% of REM; 0.001 to 0.010% of B; 0.0007 to 0.010% of Mg and 0.001 to 0.20% of Zr; and

the balance of Co and inevitable impurities;

subjecting the alloy to a solid solution heat treatment;

subjecting the alloy to a cold working or a warm working having a reduction ratio of not less than 40%; and

subjecting the alloy to an aging heat treatment at 600 to 800°C for 0.5 to 16 hours in a condition of applying stress, thereby forming a fine twin structure in a parent phase, and precipitating $Co_3Mo$ or $Co_7Mo_6$ at a boundary of the fine twin structure and the parent phase.

6. A production method for precipitation hardened Co-Ni based heat-resistant alloy, the method comprising the steps of:

preparing an alloy comprising by weight:

not more than 0.05% of C; not more than 0.5% of Si; not more than

1.0% of Mn; 25 to 45% of Ni; 13 to 22% of Cr; 10 to 18% of Mo or 10 to 18% of Mo + 1/2W; 0.1 to 5.0% of Nb; 0.1 to 5.0% of Fe; 0.1 to 3.0% of Ti;

at least one kind of 0.007 to 0.10% of REM; 0.001 to 0.010% of B; 0.0007 to 0.010% of Mg and 0.001 to 0.20% of Zr; and

the balance of Co and inevitable impurities;

subjecting the alloy to a solid solution heat treatment;

subjecting the alloy to a cold working or a warm working having a reduction ratio of not less than 40%; and

subjecting the alloy to an aging heat treatment at 600 to 800°C for 0.5 to 16 hours in a condition of applying stress, thereby forming a fine twin structure in a parent phase, and precipitating $Co_3Mo$ or $Co_7Mo_6$ at a boundary of the fine twin structure and the parent phase.

7. A production method for precipitation hardened Co-Ni based heat-resistant alloy, the method comprising the steps of:

preparing an alloy comprising by weight:

not more than 0.05% of C; not more than 0.5% of Si; not more than 1.0% of Mn; 25 to 45% of Ni; 13 to 22% of Cr; 10 to 18% of Mo or 10 to 18% of Mo + 1/2W; 0.1 to 5.0% of Nb; 0.1 to 5.0% of Fe;

at least one kind of 0.007 to 0.10% of REM; 0.001 to 0.010% of B; 0.0007 to 0.010% of Mg and 0.001 to 0.20% of Zr; and

the balance of Co and inevitable impurities;

subjecting the alloy to a solid solution heat treatment;

subjecting the alloy to a cold working or a warm working having a reduction ratio of not less than 40%; and

subjecting the alloy to an aging heat treatment at 800℃ to 950°C for

0.5 to 16 hours, thereby forming a fine twin structure in a parent phase, and precipitating $Co_3Mo$ or $Co_7Mo_6$ at a boundary of the fine twin structure and the parent phase.

8. A production method for precipitation hardened Co-Ni based heat-resistant alloy, the method comprising the steps of:

preparing an alloy comprising: all by weight,

not more than 0.05% of C; not more than 0.5% of Si; not more than 1.0% of Mn; 25 to 45% of Ni; 13 to 22% of Cr; 10 to 18% of Mo or 10 to 18% of Mo + 1/2W; 0.1 to 5.0% of Nb; 0.1 to 5.0% of Fe; 0.1 to 3.0% of Ti;

at least one kind of 0.007 to 0.10% of REM; 0.001 to 0.010% of B; 0.0007 to 0.010% of Mg and 0.001 to 0.20% of Zr; and

the balance of Co and inevitable impurities;

subjecting the alloy to a solid solution heat treatment;

subjecting the alloy to a cold working or a warm working having a reduction ratio of not less than 40%; and

subjecting the alloy to an aging heat treatment at 800℃ to 950°C for 0.5 to 16 hours, thereby forming a fine twin structure in a parent phase, and precipitating $Co_3Mo$ or $Co_7Mo_6$ at a boundary of the fine twin structure and the parent phase.